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ABSTRACT

Eighty-one fourth grade students were administered tests, tasks, and observations to investigate the relationship between IQ, rates of learning, scores on standardized achievement tests, and results of classroom observation. There was a substantial relationship between IQ, standardized tests, and rates of learning, but not classroom observation. Observation, however, had the advantages of observing the current levels of academic responding, was not influenced by rates of learning, and had the capability of being diagnostic. (Author/SB)

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The Relationship Between IQ, Rates of Learning, Standardized Achievement Tests and Classroom Observation

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ABSTRACT

It can be important to know the relationship between I.Q., rates of learning, standardized achievement, and classroom observation. Eighty-one fourth grade students were administered tests, tasks and observations to investigate this question. There was a substantial relationship between I.Q., standardized test, and rates of learning, but not classroom observation. Observation, however, has the distinct advantages of observing the current levels of academic responding, is not influenced by rates of learning, and has the capability of being diagnostic.

INTRODUCTION

There are three approaches to assessing learning in a classroom situation. The first is through the use of standardized tests, the second is to assess rates of learning, and the third is through the use of direct observation.

Standardized tests have been a well-accepted procedure for years in the world of elementary education. They certainly have their place, but their use is limited. What does a teacher do when a child produces a low reading test score? The tests reported deficiencies but suggest no direction for change.

It is possible to assess the rate at which a student learns, but learning rates may be an individual trait that is not easily changed.

The final alternative is classroom observation. Through the use of observation, one can assess what is currently happening in a classroom. They do not have to be influenced by learning rates, and usually point to a direction of deficiency, and consequently, a direction for change.

But how do these three approaches interact? What is the strength of their relationships.

The purpose of this study was to determine the relationships between I.Q., standardized tests, rate of learning, and direct observation.

METHOD

Subject and Setting

Eighty-one fourth grade children from the Kansas City, Kansas school district were the subjects of this study. Approximately one-half were from title-1 schools, and half were from non-title-1 schools.

Variables

A total of eight measures were recorded.

They were:

1) The Slossen I.Q. test
2) Reading, math, and novel learning tasks
3) The Gates standardized reading test and the math section of the Wide Range Achievement Test (WRAT)
4) The direct observation of minutes of academic responding, and minutes of competing behavior.

The learning tasks represented three areas, reading, math and a novel task, in this case, learning sign language. A pretest was given, the subjects were trained, and a posttest was administered. The reading task taught ten words that were pronounced differently than they were spelled (for example, phenomenal). The math task involved changing numbers from base 10 to base 3. The novel task included ten signs commonly used by the deaf.

The scores that were used in this study were as follows:

1) The standard I.Q. score was used from the Slossen.
2) The learning tasks used the measurement opportunities to respond, or "trials" divided by the number of items mastered plus one.
3) The Gates "Extended Scale Score" (ESS) was used, as was the WRAT standard score.
4) Minutes of competing behavior (incompatible with academic responding) and minutes of academic responding were recorded, using the "CISSAR" observation code.

The data will be presented as follows:

1) Means, N-sizes, and standard deviations will be displayed for the entire group, as well as for 3rd tiles. (The lowest third, the middle third, and the highest third, based on I.Q.)

2) Correlations will be displayed illustrating the relationships between I.Q. and the learning tasks, the standardized tests, and the direct observations.

3) Probabilities of random occurrences will be displayed to investigate the chances of the children falling into their respective 3rd tile, which were determined by I.Q.

RESULTS

Table 1 displays the N-size, mean, and standard deviations of the eight variables. The same information is displayed for the bottom, middle, and highest 3rd tile, as determined by ranking I.Q.

Insert Table 1 about here

In all but two cases, the direction of differences of the means changed linearly. For example, the lowest I.Q. group received the lowest WRAT score, the middle group received the middle score, and the highest group obtained the highest score. (Remember that "lower is better" on the learning tasks.) The exceptions were the novel task, and minutes of academic responding.

Table 2 displays the correlations (Spearman's Rho) between I.Q., and the seven variables. The standardized tests had the strongest relationship with I.Q., followed by the learning tasks. The direct observations showed the weakest relationship to I.Q., of the variables reported.

Insert Table 2 about here

Table 3 displays the probabilities that the children would randomly fall into their respective 3rd tile, which were based on I.Q. All were significant at the ".01" level, with the exception of "Minutesof Competing Behavior."

Insert Table 3 about here

DISCUSSION

A few simple statements can be made about the relationship between I.Q., and the other variables.

1) There are high correlations between I.Q., standardized tests, and learning tasks, with the exception of the novel task.
2) There is a lower relationship between I.Q., and direct classroom observation, though minutes of academic responding exhibit some relationship.

The novel task may not have proved to be a strong indicator of I.Q. because it may not have been sensitive enough to discriminate between low I.Q. children, and high I.Q. children. All of the children did relatively well on the novel task. It may not have been difficult enough to produce differences in performance.

The classroom observations may not have indicated a high correlation with I.Q., for a variety of reasons. It may be that direct classroom observations may be looking at something different than standardized achievement or rates of learning. Standardized achievement tests assess accumulated learning. The learning displayed assesses not only the childs "current academic year" progress, but also any and all previous academic experience. Consequently, they are of limited diagnostic use.

The learning tasks reflect a child's rate of learning, but also does little to suggest a direction for change, or remediation. It may also be very difficult to impact a learning rate.

However, classroom observation is not hampered by those problems. Classroom observation has three distinct advantages. They are:

1) They are totally focused on the child's current academic environment. They do not reflect accumulated achievement.

2) They are not influenced by individual rates of learning.

3) They are diagnostic in that they suggest a direction of change for the child. For example, if there is not enough academic responding occuring, increase it. Changes will become apparent immediately, as opposed to on next year's achievement test.

In conclusion, it can be said that there is a substantial relationship between I.Q., and standardized achievement, as well as rates of learning. There is a lesser relationship between I.Q., and classroom observation, though they may be assessing different things. Classroom observations have some distinct advantages. They assess what is happening now, rather than previous learning. They are not influenced by learning rates, and they point to a direction for change.

TABLE 1

		Slossen D.Q. Score	Reading Task Score	Math Task Score	Novel Task Score	Gates Extended Scale Score	Wrat Standard Score	Minutes of Competing Behavior	Minutes of Academic Responding
The Entire Group N = 81	$\bar{X}$=	95.2	33.2	8.8	9.7	460.2	94.5	30.6	67.8
	(Std. Dev.)=	(14.3)	(42.6)	(13.8)	(4.0)	(45.9)	(10.3)	(20.4)	(23.4)
The Lowest 3rd	$\bar{X}$=	80.6	59.1	15.6	11.9	427.6	88.6	35.7	66.0
	(Std. Dev.)=	(8.4)	(65.7)	(19.1)	(5.3)	(43.2)	(10.0)	(22.1)	(21.7)
The Middle 3rd N = 27	$\bar{X}$=	95.4	23.4	7.8	8.2	453.1	92.8	30.6	59.2
	(Std. Dev.)=	(3.0)	(11.2)	(10.6)	(2.2)	(24.5)	(8.7)	(20.6)	(17.9)
The Highest 3rd N = 27	$\bar{X}$=	110.6	17.1	2.0	9.0	499.8	102.0	25.5	78.1
	(Std. Dev.)=	(9.4)	(7.7)	(1.3)	(2.8)	(35.1)	(7.4)	(17.8)	(26.5)

TABLE 1: Table 1 displays the N-size, mean, and standard deviations for all eight variables. The same information is displayed for the bottom, middle and highest third, as ranked by I.Q.

TABLE 2

Correlation between I.Q., and:

Reading Task	-.559
Math Task	-.577
Novel Task	-.283
Gates	.664
Wrat (math)	.613
Minutes of Competing Behavior	-.185
Minutes of Academic Responding	.188

81 total pairs.

TABLE 2: Table 2 displays the correlations between I.Q., and seven other variables. Those variables include learning tasks, standardized tests, and classroom observations. (Spearman's Rho)

TABLE 3

Probabilities of random occurence.

Reading Task	.0003
Math Task	.0003
Novel Task	.0011
Gates	.0001
Wrat (math)	.0001
Minutes of Competing Behavior	.1855
Minutes of Academic Responding	.0096

TABLE 3: Table 3 displays the probabilities that the children would randomly fall into their respective groups. (3rd ±iles)